

# HVAC SPECIFICATIONS

## REQUIREMENTS

All mechanical work shall be free from defects in workmanship and materials for a period of one (1) year from date of final acceptance and shall meet all local and state codes. All defects, which develop or are discovered within this period shall be repaired by the Contractor to the satisfaction of the Engineer and at no additional cost.

## GENERAL

- The Contractor shall examine the site of the proposed work to determine the existing conditions that may affect his work.
- It is the intention of the Contract Drawings and Specifications to call for finished work, tested and ready for operation. All materials shall be new and of first-quality.
- All material, work, incidental accessories or other details not shown but necessary to make the work complete and perfect, and in all respects ready for operation, even if not particularly specified, shall be provided by the Contractor at no additional cost.
- The Contract Drawings are generally diagrammatic and are intended to convey the scope of work and indicate general arrangement of ductwork, pouches, and induction units. Existing ducts, pipes, utilities, etc. that are damaged during the construction period, whether or not due to the Contractor's negligence, shall be repaired or replaced by the Contractor and left in a condition satisfactory to the Engineer.
- Coordinate locations of all pouches with architectural reflected ceiling plans.
- The space around pipes, ducts, etc. penetrating rated walls, shall not exceed 1/2" and shall be packed solid with Thermafiber, Mineral Wool or equivalent non combustible material. Perimeter shall be closed off by tight fitting metal escutcheons on both sides of this construction as required by Sections C26-50.45 (b) of N.Y.C. Building Code.

## MATERIALS TO BE RETURNED TO THE AUTHORITY

- The Contractor shall deliver all excess material as shown below to a designated area in the W.T.C. complex as directed by the Engineer.
  - Light fixture air pouches

## MATERIALS PURCHASED FROM THE AUTHORITY

- The Contractor shall purchase the following materials from the Authority as required for the installation.
- Light fixture air pouches
  - Round flexible duct for air connection to pouch

## DUCTWORK

- All ductwork shall be furnished, installed and fabricated in accordance with the latest edition of the SMACNA Low and High Velocity Duct Construction Standards Manual, using prima sheets of galvanized steel. All square elbows shall be provided with turning vanes on maximum 4" centers. Provide access doors at all fire and automatic dampers for access.
- All branches and take-offs shall be equipped with volume controllers.
- All finger ducts and flexible connectors shall be 7" diameter unless otherwise indicated on drawing.
- Support horizontal ducts with hangers secured to structural steel above at intervals not exceeding 6'0". Install additional steel as required.
- Flexible connectors to the supply duct and the diffuser plenum of ceiling pouches shall be sealed with 3M Co. 600 sealant and clamped with Stainless Steel Ideal Type S2 clamps.
- All access doors shall be as per latest SMACNA Standards.
- Remove existing 4" round flexible duct connection that penetrates the 2 hr. rated closure panel within the induction unit cover. Install new 4", 26 gauge galvanized steel circular duct, seal all joints with 3M Co. 600 sealant and stainless steel adjustable tie clamps. A maximum length of 4'-0" of flexible ductwork shall be used for connection to the induction units.

## FLEXIBLE DUCT CONNECTORS

Flexible duct connectors for pouches shall conform to the requirements for Class 2 Air Duct Connectors when tested in accordance with UL 181, "Standard for Factory-Made Air Duct Materials and Air Duct Connectors." Flexible duct connectors shall be 7" diameter and shall not exceed 3 feet in length.

## CEILING REGISTERS, GRILLES & DIFFUSERS

Model numbers specified are manufactured by Anemostat or an approved equal. All finishes shall be baked white enamel.

- Registers (Return): shall be Model S3HCD
- Grilles (Return): shall be Model S3HD
- Diffusers (Supply): shall be Model DF with No. 41 core pattern (4-way) shall be Model DF with No. 31 core pattern (3-way)
- Damper: Damper for diffusers shall be Model DOB.

## WATER COOLED AIR CONDITIONING UNITS (MCA NO. 129-81-E)

- Furnish and install packaged air conditioning units. Units shall be complete with temperature control, compressor, evaporator coil, condenser water regulating valve and other system components required to provide proper air conditioning for the space designated on the Contract Drawings. Filter shall be Class I, UL listed; 45% efficiency.
- AC Units shall be furnished with the following accessories:
  - Condensate Pump in ceiling
  - Disconnect Switch in ceiling
  - Wall Mounted Control Box with thermostat
  - Ducted as shown on plans.

## 3. Schedule

Unit No.	Blower CFM	Motor H.P.	Ext. S.P.	Total Cooling Cap. (BTU)		Auxiliary Cooling Water GPM		Model No.	Total Wt. (NET)
				60 DB 67 WB	85 Deg. F E.W.T.	60 DB 67 WB	85 Deg. F E.W.T.		
AC-9	1000	1/4	0.3"	30000		8.0 GPM		804-031	300*
AC-10	1250	1/2		35600		9.4 GPM		804-037	350*
AC-11									

AC Units motor shall be 1 phase and for 208 volts.

- The Units shall be factory run, tested and rated in accordance with ARI Standards.
- AC Units shall be complete with water regulating valve. Valve shall be rated for 150 psi. working pressure.
- Units shall be similar or equal to Friedrich and rated at 150 lbs. working pressure. Units shall be cooling only models.

## PIPING AND ACCESSORIES

### A. TEST REQUIREMENTS (Aux. Cooling Water)

Operating Pressure	150 PSIG
Operating Temperature	65 Deg. F - 95 Deg. F
Hydrostatic Test Pressure	1.5 x Operating Pressure
Duration of Test	2 hours

Isolate equipment, controls, instruments and valves from the piping system during hydrostatic tests

### B. Piping & Fittings

System	Pipe	Fittings
Aux. Cooling Water	Black Steel Pipe, Conforming to ASTM A-53 Schedule 40 Grade B, Black Seamless	2-1/2" cast iron screwed 250 lb. class

A.C. Unit	Copper ASTM B-88	Wrought Copper Solder
Condensate	Hard Temper	Joint
Drain	Type (L)	5 ANSI B16.18

Vent auxiliary cooling water piping at all high points.

### C. Accessories

- Unions for auxiliary cooling water service shall be similar and equal to 250 lb. class, malleable iron with bronze seats, Grinnell Figure 554, U.L.
- Nipples 6" length or less, shall be extra heavy and the material shall be the same as the pipe. Close nipples shall not be used.
- Braided type flexible connector shall be Vibration Mounting and Control Inc., (VICO) Model MFP Style NE Max. 280 psig or approved equal.

### D. Soldered Joints

95-5 Tin-Antimony Solder having a melting point greater than 450 F. Excess solder shall be removed while still in the molten state with a fillet left at the face of the fitting.

### E. Thermometers

- Thermometers for piping shall be of the "ell angle" (universal), separate socket, industrial type with 304 stainless steel extension neck walls.
- The thermometer for auxiliary cooling shall operate at 0 - 150 Deg. F range and shall include a sufficient safety margin at either end.
- Thermometers shall be as manufactured by Albert A. Weiss, Weiskler Instrument Co., Ashcroft or approved equal.

### F. Pressure Gauges

- Pressure gauges shall be of the bourdon tube spring type with 4-1/2" dial sizes. Gauges shall have black aluminum cases with black numbers on white background. The gauges shall be as manufactured by Albert A. Weiss, Weiskler Instrument Co. Ashcroft or approved equal.
- The pressure range for the auxiliary cooling, shall be 0 - 250 psi. and the Bourdon tube shall be Bronze.

### G. Strainers

Strainers shall be similar and equal to those manufactured by Muller Steam Specialty Co. Screwed "Y" strainers for pipes 2-1/2" and smaller shall be 250 lb. No. 11 The screens for the strainers shall be stainless steel. Strainers shall be provided with capped blowdown valves.

### H. Sleeves and Escutcheons

Exposed piping passing through walls shall be fitted with chromium plated cast brass escutcheons with fastening set screws similar and equal to Fee & Mason Manufacturing Co., F & S Manufacturing Co. or Ritter Pattern and Casting Co.

### I. Pipe Supports and Hangers

- All supports and parts shall conform to the latest requirements of the ANSI Code for pressure piping B31.10 and MSS standard practice SP-58.

- Hangers shall be manufactured by Grinnell Co., Central Iron, Fee and Mason, Blawknex Co. or an approved equal.
- Pipe hangers, rods, inserts and clamps shall be those approved for their respective uses by the Underwriters' Laboratories, Inc.
- Unless otherwise specifically approved, hanger size and spacing shall be:

Pipe Sizes	Max Hanger Spacing	Minimum Rod Sizes
1/2" to 1"	9 ft. o.c.	3/8"
1-1/2" to 2-1/2"	9 ft. o.c.	1/2"

### J. Valves

Type	Size	Pressure	Jenkins Fig. No.	Crane Fig. No.	Stockham Fig. No.
Gate	Up to 2"	125 psi.	47U	428-UB	B-105
Gate	Up to 2"	150 psi.	49U	431	B-128
Gate	Up to 2"	300 psi.	280U	634E	B-144

- Balancing valves shall be non-lubricating eccentric plug (ballcentric) type with adjustable stop valve shall be rated for 175 lb.W.O.G. or 400 lb. W.O.G. Valves shall be as manufactured by Homestead Industries or approved equal.

### K. Pipe and Valve Identification

- Provide and affix a set of approved adhesive bands identifying the system and direction of flow.
- Each set shall consist of one band on which the name of the service is printed in letters not less than 1 inch high.
- Bands shall be in colors as indicated below and shall conform to ANSI Standard A-13.1.

System	Background	Letters and Arrow
Auxiliary Cooled Water	Green	Black

Adhesive bands shall be W.H. Brady Company, Seton Corp. or an approved equal.

### L. Threaded Joints

Steel pipe threaded joints shall be made tight using only an approved pipe joint compound or tape, placed on the male thread only.

## INSULATION FOR CONDENSATE DRAIN PIPING

Insulation: 1/2" thick one piece fiberglass, flame spread rating not greater than 25", smoke rating "50". (Insulate valves and fittings.)

## Auxiliary Drain Pan Requirements

- Make drain pan 12" larger than AC units on all four sides with upstanding sides 1 1/2" with 1/2" hem turned down outside of pan. Pans shall be made from 16 ga. galvanized steel with soldered corners made water tight.
- Water alarms shall be "Water Alert" Made By Dorlen model no. RI-2(T) or equal. Locate alarms so that they can be easily heard in the occupied area.
- Place a durable metal sign permanently affixed to alarm identifying AC unit and to read "When Alarm sounds call 465- 8515 weekdays, 465-4164 weekends".

## CUTTING AND PATCHING

- Piping passing through walls shall have a trim opening cut no greater than necessary for the installation of a sleeve secured therein. Sleeve shall be 1/2" in diameter larger than the outside diameter of the pipe or required insulation passing through and of sufficient length to be flush with the finished wall surface.
- Piping passing through concrete floors shall have the opening core drilled 1/2" in diameter larger than the outside diameter of the pipe passing through.
- Annular spaces between piping and sleeves or core drilled floor core openings shall be packed with thermafiber and sealed to retain the fire integrity of the walls and floors with a non-hardening compound similar and equal to Uniseal or Duxseal as manufactured by Johns- Manville Co.

## EXECUTION

- All work in occupied tenant areas shall be performed on other than normal working hours as directed by the Engineer.
- The Contractor shall notify the Engineer when shut-down of existing systems becomes necessary. Shut-down time shall be kept to a minimum.

## BALANCING

The Contractor shall provide the service of an air balancing and hydronic testing specialist who specializes in Heating, Ventilation and Air Conditioning systems. Perform all balancing in accordance with sheet metal and air conditioning Contractors National Association (SMACNA).

## SUBMITTALS

Submit for approval three (3) sets of shop drawings of ductwork and piping. Submit three (3) sets of catalog cuts for A.C. Unit, exhaust fan, ceiling grilles, ceiling diffusers, ceiling registers, valves, accessories and three (3) copies of air balancing data report.

## APPLICABLE STANDARDS, CODES AND PUBLICATIONS

This entire installation shall be manufactured, tested and installed to conform, as a minimum, to provisions of the following codes and standards except where stricter requirements are specified elsewhere herein or shown on the contract drawings.

- National and New York Electrical Code
- National Fire Protection Association (N.F.P.A.)
- New York City Building Code
- Underwriters Laboratories, Inc. (U.L.)
- American National Standards Institute Inc. (A.N.S.I.)

## CONTROLLED INSPECTION

- The ventilation system shall not be placed in operation, until it has been tested and inspected in accordance with the requirements of this Article 13 of the New York City Building Code.
- The following tests and inspection requirements shall be complied with in order to obtain an equipment use permit for the ventilating system.
  - The ventilating system shall be subject to the requirements for controlled inspection as provided in sub-article C26-107.0 of The NYC Building Code. An inspection shall be made of the complete system to verify that the installation complies with the requirements. Tests shall be conducted to ascertain that the amount of air being supplied to and exhausted from each space conforms with the code requirements, and that all required smoke detection and fire protection devices are functioning properly. The test reports required under the provisions of sub-article C26-107.0 shall be filed in the form prescribed. The form shall include the quantity of air supplied or exhausted by each outlet.

## VALVE TAGS

- INSTALL BRASS VALVE TAGS ON NEW VALVES INSTALLED ON THE CONDENSER WATER SYSTEM. TAGS MUST IDENTIFY THE TENANT AND LOCATION OF AIR CONDITIONING UNITS SERVED.
- INSTALL APPROVED ADHESIVE BAND ON CONDENSATE DRAIN LINE AT JUNCTIONS. MUST CONFORM TO PARAGRAPH "K" ON THIS DRAWING.

REV 1 | 8-15-86 | ADDED SPEC. ON VALVE TAGS

**CANTOR FITZGERALD SECURITIES CORP**  
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NEW YORK, N.Y. 10048

## MECHANICAL SPECIFICATIONS

**JOHN C. WESTRICK & ASSOCIATES**  
CONSULTING ENGINEERS  
2110 MAPLE AVENUE  
SOUTH PLAINFIELD, N.J. 07080

SCALE: NONE | DWN BY: MAC | CHK BY: JW  
DATE: 6-2-86 | JOB NO: 8-13

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